Cancer Treatment

VCU Innovation Gateway

Tumorigenic Protein Trimming

Genetic engineering of ERAP2 for tumor clearance

VCU researchers have developed a new method for the targeting and killing of tumors through the expression of ERAP2. Hydatidiform moles are growths that can grow inside the uterus at the beginning of pregnancy due to abnormal fertilization. These growths have the potential to metastasize and develop into gestational choriocarcinoma. In the majority of these choriocarcinoma cells, HLA-C is the only class I polymorphic molecule that is expressed. VCU researchers have utilized the absence of ERAP2 expression in these cells to develop a method for clearing choriocarcinoma tumors through the use of activated NK cells.

The technology

The treatment consists of overexpressing the ERAP2 variant protein in tumor cells to promote specific tumor clearance/reduction. Genetic engineering of ERAP2 can be used to achieve tumor specific recognition and clearance by immune cells. By inducing expression of an ERAP2 variant protein within the tumor, the response of the NK cells increases significantly and activates the lymphocytes. This results in the targeting and killing of the ERAP2 expressing tumor.

In vitro and *in vivo* data is available.

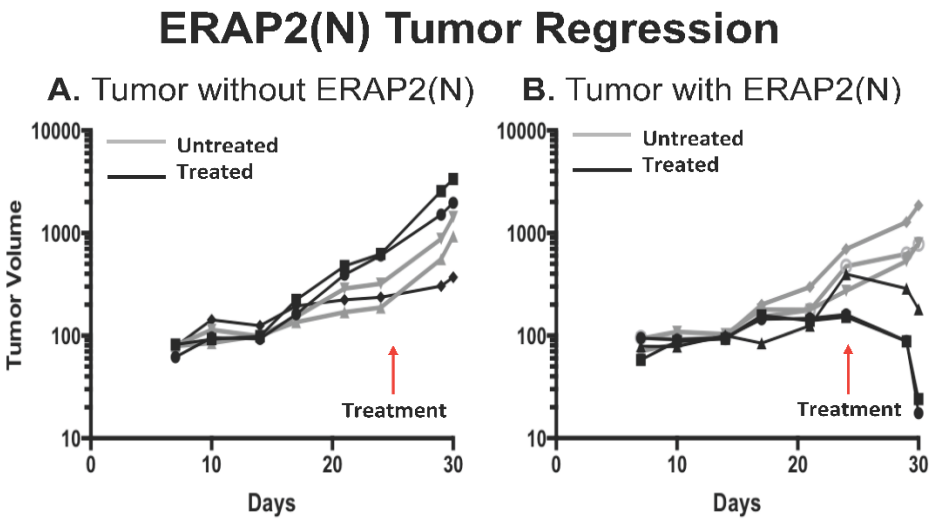

Figure 1: *Demonstration of how ERAP2(N) expressing tumors regress after being treated with lymphocytes*

Benefits

- Expedites the tumor clearing process
- Reduce or eliminate tumors

Applications

- Cancer therapy
- Specific cancer cell tumor clearance/reduction

Patent status:
Patent pending: U.S. rights are available.

License status:
This technology is available for licensing to industry for further development and commercialization.

Category:
Biomedical

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17-106

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External resources:
Warthan MD, et. al. (2018)

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